

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of)	
)	
Breitling USA, Inc., Request for Waiver of)	
Part 95 of Commission's Rules to)	Docket No. 14-196
Certify a Wrist-Worn Personal Locator)	
Beacon)	

REPLY COMMENTS OF BREITLING USA, INC.

Breitling USA, Inc. ("Breitling") hereby replies to comments filed in the above-captioned proceeding.¹

Breitling is pleased to have received support from key parties in the aviation and search and rescue communities, including the Radio Technical Commission for Maritime Services ("RTCM"). As detailed below, the record supports a finding by the Federal Communications Commission ("FCC" or "Commission") that grant of the waiver request is in the public interest.

DISCUSSION

Grant of the waiver is in the public interest, as doing so directly promotes the safety of life and furthers the purpose of the underlying rule.

A. The Emergency Promotes the Public Safety.

Breitling received support from more than twenty parties, including users of the current version of the watch (adventurers, pilots, scuba divers, and an astronaut) as well as groups and associations representing pilots and other users such as Angel Flight, the Tailhook Association, the Aircraft Owners and Pilots Association ("AOPA"), and the Equipped to Survive

¹ Breitling USA, Inc., Request for Waiver of Part 95 of the Commission's Rules to Certify a Wrist-Worn Personal Locator Beacon, WT Docket No. 14-196 (filed Oct. 2, 2014) ("Waiver Request"); *In the Matter of Wireless Telecommunications Bureau Seeks Comment on Request for Waiver by Breitling USA, Inc. to Permit Certification and use of a Wrist-Worn Personal Locator Beacon*, Public Notice, Docket No. 14-196 (rel. Nov. 4, 2014) ("Public Notice").

Foundation.² Many supporters note that the currently-available Emergency is of great use and comfort during extreme situations.³

For example, retired Naval Commander Scott Ayers Kartvedt explained that “I have worn my Breitling Emergency watch during every flight in the United States and during combat missions overseas. It gave me GREAT piece of mind knowing I could be precisely located in the event I needed rescue.”⁴ Retired Naval Aviator and former Blue Angel Craig Olson noted similar sentiments, and also asserted:

Flying ultra-long range business jets often finds us crossing the oceans, operating on polar routes, or flying over war torn or highly unstable regions. Many of these areas are incapable of sustaining human life, or provide a severe security risk due to terrorism, violence, and disease. If faced with going down in these austere and life threatening environments, having a Personal Locator Beacon to provide immediate location capability is invaluable.⁵

² See Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Lawrence J. Camerlin, President, Angel Flight NE, WT Docket No. 14-196 (filed Dec. 3, 2014); Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from CAPT Sterling Gilliam, USN (ret), Tailhook Association President, WT Docket No. 14-196 (filed Dec. 4, 2014); Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Robert E. Hackman, Vice President, Regulatory Affairs, Aircraft Owners and Pilots Association, WT Docket No. 14-196 (filed Dec. 3, 2014) (“AOPA Letter”); Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Doug Ritter, Chairman and Executive Director, Equipped to Survive Foundation, WT Docket No. 14-196 (filed Dec. 16, 2014) (“ETSF Letter”).

³ See e.g. Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Matthew S. Miller, Assistant Special Agent in Charge, U.S. Secret Service, Rome Field Office, WT Docket No. 14-196 (filed Nov. 19, 2014); Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from David Martin, WT Docket No. 14-196 (filed Nov. 21, 2014); Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Gene Wayne Adgate, WT Docket No. 14-196 (filed Dec. 4, 2014).

⁴ Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Scott Ayers Kartvedt, CDR (ret.), WT Docket No. 14-196 (filed Dec. 1, 2014).

⁵ Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Craig Olson, CDR USN (ret.), WT Docket No. 14-196 (filed Dec. 1, 2014).

Another former Naval Aviator, James Paul DiMatteo, stated that “I now fly with my wife and children which makes the rescue capabilities of the Emergency2 that much more important to my family and me.”⁶ A former Vice Commandant of the U.S. Coast Guard, and former Search and Rescue (“SAR”) pilot, John P. Currier, detailed that:

Based on my personal experience of 38 years in the Coast Guard and over 7,000 flight hours as a commercial and military pilot, I strongly support certification of an emergency locator device. I can cite numerous cases where lives could have been saved with the ability to quickly locate downed aviators and others in distress. In cold water and extreme environmental conditions, minutes often mean the difference between a successful rescue and the loss of survivors.⁷

And American astronaut Mark Kelly noted that he wore the Emergency on multiple space flights and that “we (myself and NASA) never had a concern of an inadvertent actuation of the Breitling Emergency watch.”⁸

As AOPA summarized, “there are compelling safety reasons that warrant expeditious granting of Breitling’s waiver request.”⁹

B. Intent of the Rules Will be Furthered by Grant of the Waiver.

Allowing for certification of the Emergency would make available, at least to qualified consumers, a wrist-worn, 406 MHz Personal Locator Device that has been proven capable of saving lives. This will provide added protection to adventurers, pilots, sailors, and other outdoor enthusiasts, without posing a risk of interference to others.

⁶ Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from James Paul DiMatteo, CAPT U.S. Navy (ret.), WT Docket No. 14-196 (filed Dec. 3, 2014).

⁷ Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from John P. Currier, Vice Admiral, U.S. Coast Guard, Retired, WT Docket No. 14-196 (filed Dec. 4, 2014).

⁸ Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Mark Kelly, WT Docket No. 14-196 (filed Nov. 24, 2014).

⁹ AOPA Letter at 1.

RTCM “has no objection to the waiver requested by Breitling and recommends that the waiver be granted.”¹⁰

One party, the U.S. SARSAT Program (“SARSAT”), stated that it could support the waiver if certain concerns are resolved.¹¹ Breitling believes that the record already addresses many of these issues, but provides the following response:

Antenna Adequacy

SARSAT questioned whether the Emergency antenna is configured and can be deployed to ensure that all transmissions are detected, suggesting that possible interference from ground reflections has not been tested.¹²

Testing shows that the antenna meets appropriate standards, and indeed the Letter of Compatibility would not have been issued “without satisfactorily completing this testing.”¹³ The Emergency was tested in the “beacon above ground plane” configuration, as requested by COSPAS-SARSAT and described in the COSPAS-SARSAT test standard T.007, and not in the “beacon sitting on ground plane” configuration. Additionally, during testing, all signals were properly received and processed by the COSPAS-SARSAT system during all test-coded activations for certification testing as well as during several field tests in Wales (UK) and BC (Canada). Breitling has attached a report of this testing.¹⁴

¹⁰ RTCM Comments, WT Docket No. 14-196, at 1 (filed Dec. 4, 2014) (“RTCM Comments”).

¹¹ Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Edwin Thiedeman, SAR Systems Specialist, U.S. Coast Guard, WT Docket No. 14-196 (filed Dec. 4, 2014) (“SARSAT Letter”).

¹² SARSAT Letter at 1.

¹³ ETSF Letter at 2.

¹⁴ See Attachment (portion of TUV test report showing receipt of all satellite signals during Real Activation Test). The watch was tested with both types of wrist bands, rubber and titanium.

Battery Operating Life

SARSAT expressed concern that the Emergency has a battery operating life of 18 rather than 24 hours, stating that this could impact the likelihood of a successful rescue.¹⁵ SARSAT additionally questioned the application of rechargeable batteries for search and rescue beacons, and sought reassurance that the 18 hour battery life will be available over the lifetime of the battery.¹⁶

As noted, COSPAS-SARSAT issued a Letter of Compatibility in light of this reduced battery life.¹⁷ The U.S., as a party to COSPAS-SARSAT, reviewed and approved this letter. During the certification process, upon strict application of the C/S IP (LIRB) Rev.2 testing standard, the Effective Operation Lifetime battery duration was calculated to be 20.6 hours, taking into account all temperature, age and recharge intervals factors as well as a safety factor of 1.65.¹⁸ The 18 hours mentioned in the Waiver Request corresponds to worst case conditions, as requested.

Additionally, as noted in the Waiver Request, “useful life” is not applicable to rechargeable batteries, and the battery replacement date will be prominently visible on the watch.¹⁹ In terms of RTCA application of rechargeable batteries for search and rescue beacons, as RTCM explained that, while it initially planned to adopt a standard for wrist-worn devices, it

¹⁵ *Id.*

¹⁶ SARSAT Letter at 2.

¹⁷ Waiver Request at 8 and Attachment

¹⁸ This represents an additional 65% capacity loss of the battery, which was placed into the calculations to provide a worst-case scenario test result.

¹⁹ Waiver Request at 4.

later determined that, because the Breitling design “was unlikely to be followed,” RTCM instead would support the Waiver Request.²⁰ RTCM detailed:

RTCM has generally not supported rechargeable batteries in PLBs because rechargeable batteries tend to lose their charge over a period of weeks or months, unlike the long life non-rechargeable batteries required by the RTCM standard. This is appropriate for conventional PLBs which may be stored for long periods without attention. The Breitling Emergency, however, is worn on the wrist and has a special docking charging station that presents the state of charge to the user whenever it is taken out of the charger and worn. **Since the batteries must be charged to make it useful as a watch, we conclude that the design minimizes the probability that the device will be used with discharged batteries.**²¹

ETSF agreed, explaining that the “Letter of Compatibility already incorporates[s] a standard that adequately addresses the issue of reduction in rechargeable battery capacity as the result of temperature and aging. The Letter of Compatibility would not have been issued without satisfactorily completing this testing.”²²

Temperature Limitation

SARSAT additionally stated a concern that the Emergency is designed to “cut power for 121.5 MHz emission if internal temperature drops below 0°C.”²³

The Commission previously has determined that permitting a higher operating temperature, from -10°C to +55°C, would be appropriate.²⁴ In this instance, the operating condition is not much different. Moreover, as noted, while the 121.5 MHz emission cuts off at

²⁰ RTCM Comments at 2.

²¹ RTCM Comments at 2 (emphasis added).

²² ETF Letter at 2 (noting that the FAA allows the use of rechargeable batteries in Emergency Locator Transmitters, “the aviation equivalent to PLBs.”).

²³ SARSAT Letter at 2.

²⁴ Breitling U.S.A., Inc., Order, 16 FCC Rcd 18560, at ¶ 8 (2001).

below 0°C, the LEOSAR system allows a localization of the beacon by Doppler Effect and SAR teams now are often equipped with a 406 MHz homing device.²⁵

Nonetheless, Breitling would agree to place an additional warning in the Conditions of Use waiver to be signed before purchase by U.S. consumers, as follows:

WARNING

COSPAS-SARSAT rigorously tests and “type approves” beacon models before they go into production to ensure that production beacons sold to the public can be expected to operate under a variety of extreme conditions. A few beacons, with exceptional characteristics, may not meet all of the standards for type-approval, but still may be approved for use with COSPAS-SARSAT by virtue of a Letter of Compatibility (LoC).

The Emergency watch received on April 18th, 2014 a Letter of Compatibility (TAC-717) meaning it is perfectly suitable for your particular needs, but you will need to take some extra care to be certain that it is the case. The following topics are part of the Letter of Compatibility:

- **The Emergency watch shall be set for operation in such a manner that neither of the antenna sections makes contact with ground or any conductive surface, since this might affect the antenna radiation pattern.**
- **The Emergency watch was not designed to operate while in water or when the watch is still worn on the wrist.**
- **The Emergency watch was tested for operating temperature range of -20°C to +55C, and complies with all COSPAS-SARSAT requirements, except for the minimum duration of continuous operation is 18 hours, which is less than the minimum operating lifetime of 24 hours required by COSPAS-SARSAT.**
- **The Emergency watch provides for the operation of an integrated 121.5 MHz radio-locating transmitter only at temperatures above 0°C, whereas at temperatures below 0°C the 121.5 MHz homer is automatically disabled.**
- **The Emergency watch uses a proprietary battery rechargeable battery pack. It is recommended that the battery charge be properly maintained by the user by recharging battery at regular intervals, not exceeding recommended time between charges of 2 months.**

Notice to Consumers

SARSAT proposed issuing a specific notification to consumers regarding the Emergency functionality and limitations. As outlined above, Breitling would agree to provide such notice.

²⁵ Waiver Request at Attachment 1 (p.5).

Qualified and Properly Instructed Customers

SARSAT requested limiting use of the Emergency to qualified and properly instructed customers, noting Breitling's agreement to ensure such training.²⁶

Breitling agrees. As noted in the Waiver Request as well as in the many letters of support filed in this proceeding,²⁷ Breitling is committed to such training.²⁸ Indeed, Breitling already has procedures in place in 43 countries to ensure proper training of its customers, procedures similar to what it put in place fifteen years ago when Breitling first sold the Emergency. During these fifteen years on the market, no false alarms were reported.

Moreover, as a number of letters in the record note, "any improper use of the transmitter would result in severe penalties and financial expenses,"²⁹ including refurbishment of the watch. For these reasons, the likelihood of inadvertent activation is exceedingly minimal.

GNSS Functionality

Finally, SARSAT raised the question of whether the Emergency is equipped with a GNSS function, which it states will soon be a RTCM requirement.³⁰

Obviously, the Commission cannot grant a waiver for a standard that does not yet exist and has not yet been incorporated by reference into the Commission's rules. Moreover, Breitling

²⁶ SARSAT Letter at 2-3.

²⁷ Waiver Request at 5.

²⁸ See Waiver Request at 5 (describing how sales associate will explain the details of operation and the user's responsibilities, and require a signed "Conditions of Use" form).

²⁹ See Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from Kim Woody, WT Docket No. 14-196 (filed Nov. 18, 2014).

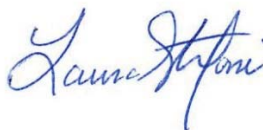
³⁰ SARSAT Letter at 3.

should not be expected to comply with a standard that has not been established.³¹ This cannot bar grant of the present Waiver Request.

CONCLUSION

As RTCM and many other key parties noted, wearing a Personal Locator Beacon on the wrist increases the probability that it will be available in the event of an emergency. For the foregoing reasons, Breitling respectfully requests that the Commission grant a waiver of Section 95.1402 to allow for certification of the Emergency watch. Grant of this request is in the public interest.

Respectfully submitted,



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December 18, 2014

³¹ See ETSF at 3 (noting that, while “GNSS assists in further narrowing the search area, the general superiority of the 406 MHz beacon is adequate for these purposes.”).

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Product Service

Configuration 8 – EUT fitted with metal wrist strap

Test Start: 2013-09-06 17:06:18z
Test End: 2013-09-07 08:27:49z
15 Hex ID: AA5F0 00678 00001

Actual location of the test beacon: 50.818263
(Daedalus Airfield, Lee-on-the-Solent, West) -1.197454

Satellite ID	Satellite Pass Number	15 Hex ID Provided by LUT	Doppler Latitude	Doppler Longitude	Mean Rx Power (dBm)	TCA	CTA (deg)	Location Error (km)
S11	35718	AA5F0 00678 00001	50.81309	-1.20340	-123.78	23:04:20	-20.924	0.710
S13	5033	AA5F0 00678 00001	50.83089	-1.20321	-134.35	22:17:27	-13.188	1.460
S8	66811	AA5F0 00678 00001	50.82674	-1.19491	-131.19	21:57:57	-13.936	0.959
S11	35717	AA5F0 00678 00001	50.82151	-1.19006	-132.20	21:23:00	-4.954	0.632
S13	5032	AA5F0 00678 00001	50.82609	-1.20489	-125.88	20:36:52	2.556	1.014
S13	5031	AA5F0 00678 00001	50.75383	-1.34510	-133.58	18:57:41	16.599	12.604
S8	66810	AA5F0 00678 00001	50.82946	-1.21174	-130.45	20:16:44	1.923	1.598
S11	35716	AA5F0 00678 00001	50.82561	-1.20585	-134.15	19:43:09	10.089	1.007
S8	66809	AA5F0 00678 00001	50.83050	-1.22034	-135.58	18:36:57	15.966	2.105
S7	79646	AA5F0 00678 00001	50.82892	-1.18938	-125.75	17:19:00	-9.914	1.313
S7	79654	AA5F0 00678 00001	50.82631	-1.19483	-129.61	07:08:16	12.574	0.913
S7	79653	AA5F0 00678 00001	50.81480	-1.22711	-133.52	05:28:56	-2.068	2.117
S7	79652	AA5F0 00678 00001	50.82066	-1.20555	-130.52	03:48:10	-17.951	0.628
S12	23606	AA5F0 00678 00001	50.82277	-1.19459	-127.22	04:35:33	17.665	0.540
S10	42762	AA5F0 00678 00001	50.81030	-1.20459	-132.96	03:44:33	-5.941	1.017
S12	23605	AA5F0 00678 00001	50.82190	-1.19568	-129.33	02:55:50	3.972	0.423
S12	23604	AA5F0 00678 00001	50.81712	-1.28773	-138.34	01:14:43	-11.828	6.339

$$\begin{aligned}\text{Ratio of Successful Solutions} &= \frac{\text{number of Doppler solutions within 5 km with } 1^\circ < \text{CTA} < 21^\circ}{\text{number of satellite passes over test duration with } 1^\circ < \text{CTA} < 21^\circ} \\ &= \frac{15}{17} \\ &= 88.2\%\end{aligned}$$



Product Service

Configuration 8 – EUT fitted with rubber wrist strap

Test Start: 2013-09-05 17:23:40
 Test End: 2013-09-06 08:06:10
 15 Hex ID: AA5F0 00678 00001

Actual location of the test beacon: 50.818263
 (Daedalus Airfield, Lee-on-the-Solent, West) -1.197454

Satellite ID	Satellite Pass Number	15 Hex ID Provided by LUT	Doppler Latitude	Doppler Longitude	Mean Rx Power (dBm)	TCA	CTA (deg)	Location Error (km)
S13	5019	AA5F0 00678 00001	50.81058	-1.19073	-127.40	22:38:27	-16.516	0.976
S8	66797	AA5F0 00678 00001	50.82942	-1.19356	-124.87	22:10:20	-15.910	1.270
S11	35704	AA5F0 00678 00001	50.82221	-1.18972	-124.95	21:43:50	-8.239	0.698
S11	35703	AA5F0 00678 00001	50.69286	-1.31680	-114.33	20:03:40	7.266	16.266
S13	5017	AA5F0 00678 00001	50.82791	-1.20976	-127.00	19:18:05	13.846	1.377
S8	66795	AA5F0 00678 00001	50.83148	-1.21834	-129.96	18:48:58	14.410	2.075
S11	35702	AA5F0 00678 00001	50.82954	-1.22554	-128.69	18:24:56	20.124	2.336
S7	79632	AA5F0 00678 00001	50.82704	-1.18949	-125.57	17:43:40	-13.830	1.124
S7	79639	AA5F0 00678 00001	50.81602	-1.17868	-120.80	05:53:21	1.729	1.341
S10	42749	AA5F0 00678 00001	50.82382	-1.19499	-118.04	05:36:09	10.810	0.641
S12	23592	AA5F0 00678 00001	50.82517	-1.19026	-117.07	04:46:12	18.936	0.919
S7	79638	AA5F0 00678 00001	50.81189	-1.20735	-129.94	04:12:57	-14.038	0.992
S10	42748	AA5F0 00678 00001	50.81355	-1.21512	-126.48	03:55:45	-4.169	1.346
S12	23591	AA5F0 00678 00001	50.82345	-1.19420	-114.49	03:06:38	5.582	0.620
S10	42747	AA5F0 00678 00001	50.80062	-1.20168	-132.24	02:13:52	-20.239	1.983
S12	23590	AA5F0 00678 00001	50.81954	-1.20996	-128.32	01:25:40	-10.037	0.889

$$\begin{aligned}
 \text{Ratio of Successful Solutions} &= \frac{\text{number of Doppler solutions within 5 km with } 1^\circ < \text{CTA} < 21^\circ}{\text{number of satellite passes over test duration with } 1^\circ < \text{CTA} < 21^\circ} \\
 &= \frac{15}{16} \\
 &= 93.75\%
 \end{aligned}$$